DOCUMENT RESUME

ED 304 784 EA 020 807

AUTHOR Anderson, Carolyn S.; Barr, Rebecca
TITLE Teacher Response to Proposed Changes in Grouping: Impact on Policy and Practice.
PUB DATE Mar 89
NOTE 15p.; Paper presented at the Annual Meeting of the American Educational Research Association (San Francisco, CA, March 27-31, 1989).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Ability Grouping; *Adoption (Ideas); Case Studies; *Change Strategies; Educational Change; Elementary Secondary Education; Feedback; *Grouping (Instructional Purposes); *Heterogeneous Grouping; Pilot Projects; *Teacher Attitudes

ABSTRACT

Grouping for instruction has characteristics that make existing structures, habits, and attitudes resistant to change. This case study accordingly describes a school district located 40 miles south of Chicago in which attempts were made to change attitudes about, and the practice of, instructional grouping over a 3-year period. Two ways are highlighted in which staff interest and involvement were solicited in the change process: formal feedback and pilot projects. The paper begins with a brief description of the district and a summary of the project. The subsequent section focuses primarily on teacher attitudes and fears that were expressed in the opportunities for feedback to the Program Council. These concerns included the belief that heterogeneous grouping is bad for students, that heterogeneous classes are larger than ability grouped classes, that the current curriculum "fits" ability grouping, that popular instructional strategies "fit" ability grouping, that school conditions will supersede any guidelines, that changed grouping requires retraining, that grouping guidelines would eliminate transitional grades, and that placement or reevaluation requires time and tools. The next section describes a series of pilot projects that were developed to explore alternative grouping strategies: seventh- and eighth-grade math level reduction; ninth-grade science level reduction; high school English shift from basic to regular; ninth-grade language arts basic level enrichment; ninth-grade movement from prealgebra to algebra; fifth-grade cooperative learning; sixth-grade team teaching; and a fifth-grade reading-as-thinking project. Conclusions from the study are enumerated, and references follow. (TE)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED304784

Teacher Response to Proposed Changes in Grouping: Impact on Policy and Practice.

by

Carolyn S. Anderson
Niles Township High Schools
Skokie, Illinois

Rebecca Barr
National College of Education
Evanston, Illinois

A paper presented at the Annual Conference of the
American Educational Research Association
March 1989
San Francisco, California

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☒ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Carolyn S. Anderson

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

EA 020 807

Teacher Response to Proposed Changes in Grouping: Impact on Policy and Practice

Schools rarely operate as fully rational systems, in which decisions are made in a linear fashion, on the basis of convincing information. Concern for internal maintenance of the system and cultural or environmental pressures may replace goals as the impetus for action (Parsons, 1959). Schools respond to values more than to objective data, and therefore, any attempt to change practice must take into account the belief systems of participants (Sergiovanni, 1986; Block, 1985; Sarason, 1971; Sarason and Klaber, 1985).

Change efforts must also consider the insecurity created by the threat of change. By encouraging participation on a voluntary basis (Helms, 1985; Rutherford and Murphy, 1985), by preserving some control for participants over change (Sirotnik, Goldenberg, and Oakes, 1986; Rutherford and Murphy, 1985) and by beginning change on a small scale (Block, 1985), change agents can hope to be more successful.

Grouping for instruction has characteristics which make existing structures, habits, and attitudes resistant to change. First, changes in grouping strategies require major adjustments in scheduling, curriculum, teacher planning, and teaching strategies. Current grouping practices occur within well coordinated systems and changing one aspect may create pressures or undesirable consequences for another. Second, teachers tend to hold strong beliefs, if for different reasons, that ability-grouping is beneficial for all students. Grouping patterns are, therefore, likely to continue in their present form unless there is some initial directive to change, followed by incentives to change.

The following case study describes a district in which attempts were made to change attitudes about instructional grouping and the practice of grouping over a three year period. During this time the topic of grouping was studied, staff was involved in discussions and pilot projects, and a set of guidelines was evolved. In this paper (a follow-up to two 1987 AERA papers by the same authors) we highlight two ways in which staff interest and involvement were solicited in the change process: formal feedback and pilot projects.

The paper begins with a brief description of the district and a summary of the project. Insights about changing grouping practices, gained from faculty feedback and the pilot projects, are explored in the body of the paper.

District Profile

The change effort occurred in a K-12 district of 4400 students, located 40 miles south of Chicago. The student body was drawn from several communities, including rural/ farming and suburban areas. The student body was about 35% black, with a range of socioeconomic status among both whites and blacks. There were at the time of the study five elementary schools (grade K-6), two junior high schools (grades 7-9), and one high school. The schools varied widely in racial composition; only one elementary school and the high school came close to reflecting the district ethnic proportions. Others varied from about 15% black to over 90% black.

Since the early 1980's a concerted effort had been made to coordinate the three secondary schools in curriculum policies and procedures. Secondary principals relied heavily on existing course placement guidelines and course syllabi developed commonly among the buildings. With the advent of K-12 curriculum committees in the fall of 1984, secondary principals seemed relieved to relinquish their role in curriculum development. For example, one principal claimed neither to have nor to want responsibility for deciding how many levels (tracks) to provide in a given subject area, citing that as "the curriculum committee's responsibility." By contrast, elementary principals seemed to view the curriculum committee role with more suspicion, especially in the area of student placement, fearing that their flexibility in placement and curriculum decisions would be curtailed.

Curriculum differentiation at the secondary level was typical of many districts. Explicit or intentional tracks existed, with three to four in English (increasing from three to four in the ninth grade); four to five in math (decreasing from five to four in the ninth grade); and three tracks in science beginning at grade 9 (no tracking at the junior high level).

Explicit tracking, however, was not the only form of differentiation which occurred. In fact explicit procedures for tracking would tend to under-represent its true extent. An informal system of tracking (or covert tracking) occurred both because teachers and counselors held a tacit understanding that certain courses were most appropriate for certain students and also because of a domino effect which occurred when several classes in a student's schedule were part of a tracked sequence. (Jeannie Oakes further documents this phenomenon in Keeping Track, 1985.)

Furthermore, placement criteria relied heavily on a non-measurable category called "teacher recommendation", which clouded the explicit tracking phenomenon. Teachers applied subjective criteria in making their recommendations and/or often placed students on the basis of behavior or applied ability rather than on the basis of potential ability.

Summary of the Project

The case study described here involved an attempt to look at some of the implicit tracking issues and all of the explicit ones in order to derive policy and guidelines which would improve, standardize, and equalize the use of instructional groups. The prevailing problem of the study and ultimately its largest success was the conversion of staff attitudes on the question of grouping and curriculum differentiation.

Concerns about tracking surfaced among central office administrators during the 1984-85 school year. The quality of lower track programs in ensuring student progress and success was questioned. It was noted, for instance, that the curriculum offered to students in the bottom track was not only less comprehensive and less indepth, but also created behavior problems for teachers, was associated with less time on task, locked students into a lower standard of achievement (fewer expectations in the curriculum), resulted in less success (proportionally more D's and F's), and perceived lower self-esteem. The suspicion also existed that multiple levels of a course were costly both in master scheduling difficulty and in creating artificially low class sizes because there were more sections than the grade level in a given school warranted. Furthermore, it was evident that the lack of a clear policy and guidelines prevented consistency in how principals and curriculum committees managed grouping.

The Superintendent then directed two district administrators, the Director of Evaluation and Curriculum (first author) and the Assistant Superintendent for Curriculum (referred to collectively as the Curriculum Office) to study the topic and make a recommendation. The group selected to conduct the study was the Program Council, consisting of four teachers and five administrators (including the Curriculum Office) charged with overseeing the district's curriculum. This nine person body spent two years studying the research on grouping and tracking, receiving advice from a consultant (second author), piloting alternatives, getting broad-based input, and trying to devise policy and guidelines which would enhance the positive characteristics of grouping, diminish the negative, and preserve building and department flexibility in placing students to meet their needs.

Initially it was thought that the only necessary resource was research on the topic of grouping. To this end significant research on the topic of grouping and tracking from a variety of perspectives was discussed by Program Council during the fall of 1985. These readings were of greater use in eliciting the deep personal biases of each committee member than in suggesting alternatives to the status quo.

By the end of the Fall semester it was apparent that research alone was a necessary but not sufficient resource. There was frustration that the problem seemed too overwhelming to address without changing an entire social system (new curriculum, massive inservice, and attitude reversals). To address these concerns a consultant was identified to propose options to the current system and suggest how change could be made. The consultant, after prior discussions and exchange of information with the Curriculum Office, met with the Program Council once and with the Curriculum Office another time later in the semester. In addition she communicated with one of these administrators (the first author) numerous times by phone during the remainder of the semester. The consultant performed some critical functions in defining the problems and suggesting approaches to developing guidelines. She provided a theoretical perspective for understanding schools, grouping, and change and interpreted district data in a new way for Program Council within this framework.

A key resource inside the district was the support offered by the Curriculum Office both to the Program Council and to individual staff members interested in the grouping issue. These administrators spent time talking with staff members, assisting them in preparing pilot projects on grouping, facilitating inservice opportunities, and most importantly providing the necessary openness and time to encourage dialogue. This proved to be most important within Program Council in helping members articulate and consense about their values and in providing support for pilot projects.

Drafting guidelines proved to be a major hurdle. When the Curriculum Office submitted a draft of guidelines to the Program Council for approval, there was active opposition. Because the Council had not been involved in the actual draft and because the document included assertions which had not been discussed by the Council, the draft was poorly received. Such resistance foreshadowed what could happen on a larger scale in the district. The resistance was resolved by acknowledging the value laden nature of grouping, by creating an opportunity to process values, and by giving members direct responsibility for the document writing. (Details on this resolution process are described in a chapter by the authors in a forthcoming book, Curriculum Differentiation, R. Page and L. Valli, Eds., S.U.N.Y.)

Staff Feedback

In this section we focus primarily upon teacher attitudes and fears which were expressed in the opportunities for feedback to the Council. Some feedback was solicited; other feedback was volunteered. Since minutes of the Program Council were disseminated in all buildings, and were written in some detail and because Program Council members discussed the committee's work with colleagues, interest and concerns emerged early in the process, even before any document had been written.

For example, teachers who used ability grouping at one elementary school became concerned that their organization of classes would be changed without input. The elementary principal in this building defended ability grouping on the basis of time on task. "More students receive a higher amount of direct instruction in reading from the teacher [in homogeneous classes] because there are no more than two groups for whom the teacher must prepare. The heterogeneous classes have at least three groups and occasionally more. It seems the more groups there are, the higher [the] amount of seatwork."

Concern was also expressed by the teachers association that reduction in the number of levels would lead to larger class size. They wrote in a letter to the district administrators, "It is hoped that any change in class grouping would not be used as a reason to increase class size or to reduce the number of staff members . . . . Increases in class size could easily burn out staff members working with large heterogeneous groups. . . ."

One elementary principal wrote to the Program Council in December 1985 that teachers were the biggest concern when considering heterogeneous grouping: "I find them reluctant to attempt to meet the needs of all students. It is much easier for them to teach to one level rather than accommodate several. Attitudes must change." Only one principal from the very beginning supported the reduction of ability grouping. He wrote the following summary of his experience with homogeneous grouping: "Past experience here taught us that it [homogeneous grouping] was ineffective. . . resulted in negative feelings of self-worth. This also merged into the community. Parents of high group children . . . . touted this in the community resulting in further negativism from other parents."

After training by Program Council, principals in the fall of 1986 delivered an inservice to give staff the opportunity to talk about values behind the grouping issue. This inservice created more positive than negative responses, with many pilot

projects being suggested as a result when teachers became aware that they could help to structure the guidelines and plan for change.

A formal opportunity for written input was requested between March and May of 1987. Staff were asked to discuss by grade level or department the most recent draft of guidelines and provide reactions to a set of questions:

1. The guidelines are designed to provide conditions rather than inflexible rules. To what extend does the written document reflect the flexibility that we intended?
2. Thinking about your level and subject curriculum, what would you have to change in order to meet the guidelines? How you group students within your class? How the curriculum committee determines criteria for placement? The materials you use? the way you allocate your time? The way you deliver instruction? Etc.
3. What information do you need in order to meet these guidelines adequately, other than information already provided in the document?
4. Can you suggest some additional examples, specific strategies, or specific criteria which could be added to this document?

The responses included many positive comments and reflected considerable support for the project. However the input in this form alerted Program Council to further issues for consideration. It is these barriers to change, raised by staff reaction to the proposal, which are highlighted below. They illustrate some of the ingrained opposition to change as well as teacher awareness of and concern about structural problems which must be addressed in creating change in instructional grouping practice.

Heterogeneous grouping is bad for students.

Concern was expressed that requiring heterogeneous grouping for part of the day would adversely affect the education of high achievers. Behind this fear is the implied assumption that heterogeneously grouped classes are less rigorous and less challenging. One department reported "In practice this is bound to be unfair to the honors level student. It doesn't seem so on paper, but in reality this is what will happen."

Some teachers reported fear that heterogeneous grouping was difficult and frustrating for all students. Students may not learn as much, it was argued, when there are too many levels in one room. Slow learners need the opportunity for a slower pace. At the secondary level, this opinion was prevalent except among social studies teachers. At the elementary level, it was expressed most often by teachers currently

using homogeneous grouping. Elimination of stigmas associated with the low track was seen as the positive side of the plan.

There remains an attitude among a subset of teachers that homogeneous grouping allows more time to direct students and increases the likelihood that students will stay on task. Heterogeneous grouping is perceived by these teachers to prevent individualization. There is a related belief that goals are more attainable for students when they are homogeneously grouped.

Heterogeneous classes are larger than ability grouped classes.

Teachers seem to associate heterogeneous grouping with larger class size. There was approval of the recommended class size limit of 15 for basic classes, but also a fear that heterogeneous classes would grow in size as a result. The mainstreaming of special education students was mentioned as a factor which should influence class size.

The current curriculum "fits" ability grouping.

The current curriculum is largely skill based and sequential, a curriculum orientation that best matches homogeneous grouping. In addition, a topic based curriculum finds less support in available textbooks. One department asked skeptically, "Will any [textbooks] truly meet the specifications in this section?" Curriculum revisions would be needed to imbed more thinking skills and problem solving skills for all students. The maximum of three levels would require some reductions in departments which currently have four or five levels. A major curriculum change would be required to make the lower track more challenging so that movement to the regular track would be easier. One teacher stated that "The differences between 9th grade algebra and pre-algebra are so great that no reasonable amount of effort will overcome them."

Concern was expressed all the way from kindergarten to twelfth grade that materials currently available are rarely geared to cover the range from high to low level and that multiple materials would be necessary for heterogeneous grouping. However such a scenario is perceived to present the teacher with an additional and undesirable burden of planning for more than one group in the room.

Popular instructional strategies "fit" ability grouping.

Teachers reported a tendency to teach only to the middle group, and a fear of managing vast student differences in one classroom. ("I have imagined myself with some kids at a 5th grade level and some at an 8th grade level in the same class.") Traditional lecture formats with heterogeneous grouping would have to be replaced with multiple lectures or alternatives to lecturing. Time would have to be reallocated.

Teaching multiple levels in one room was anticipated to require considerably more planning and preparation on the part of teachers, and increased use of grouping within the class. New instructional strategies (including more reliance on right brained activities) for reaching a mixed group of students would be needed. The guideline that special services be better coordinated with regular education, especially by providing in class support was applauded.

School conditions will supersede any guidelines.

Teachers recognize that there are factors in the school structure which affect how grouping occurs. Elective courses, especially those offered as only one section, are most often heterogeneous by default. In an effort to "fill" the course, no restrictions are placed on entrance requirements. On the other hand, scheduling often dictates where the high, middle, or low students fall, even in planned heterogeneous classes. Mixing students heterogeneously for part of the week in a class and homogeneously part of the week could create massive scheduling problems on the secondary level. Students moving in and out of the district and placed in classes based on available space and class size can disrupt planned grouping of either kind. Cross grade splits, the proportion of mainstreamed special education students, and the total distribution of high, average and low students also affects the class.

Don't change the rules without retraining us.

Teachers expressed a desire for more inservice on topics such as classroom management, grouping in heterogeneous classes, teaching for thinking and understanding, evaluating student progress on higher order skills, and use of criterion-referenced tests to place students. One department summarized the need for inservice this way: "Educating teachers is paramount. Old habits die hard."

Teachers expressed considerable concern about whether adequate inservice would be available to help teachers interpret and implement the grouping procedures. There is always the fear of being asked to do something new without adequate preparation.

Transitional grades are a good intervention.

Most of the primary teachers indicated a concern that the grouping guidelines would eliminate the possibility of transitional grades, in which students who perform below level after kindergarten or first grade are put into a small but homogeneously grouped section in which their skills are remediated. Teachers have a strong sense that the transitional experience promotes later success among students and that it is an excellent way to meet the needs of students who are below level. In these classes students can be challenged appropriately, with a focus on bringing them up to grade

level. Transitional grades are believed by teachers to be a form of early intervention which is effective in preventing later referral for special services.

Placement/Reevaluation requires time and tools

The problem of placing students appropriately in groups and providing sufficiently frequent reevaluations of their progress was expressed by a number of teachers. When the goal is to move students through the system and out of lower tracks, the need for adequate procedures and assessment devices becomes imperative. Revision of placement criteria to include entry/exit level skills was endorsed. Accessibility of test score data was also stressed as important.

A related concern is the problem of measuring and taking into account maturity and social development especially at grades K-2, where standardized tests do not appear to be of much use. Yet this is a stage at which some kind of grouping might be most important.

Pilot Projects

The decision to use pilot projects to explore alternative grouping strategies was a contribution of the consultant which not only encouraged involvement and interest, but also gave the district some clues as to what works and what doesn't work. A review of each project is presented below, including a summary of what was learned from the pilot and what its contribution was to the success of the grouping study.

Seventh and Eighth Grade Math Level Reduction

Prior to the pilot program, there were five levels at each grade. In the 1986-87 school year the seventh grade pre-algebra and level A students at one junior high were both taught pre-algebra. All students had scored at or above the 80th national percentile on the CTBS total math score. At the end of the year the number of students recommended for Algebra I in eighth grade was comparable to the number normally recommended when students were exposed to two different curricula (pre-algebra and level A).

Ninth Grade Science Level Reduction

During the 1986-87 year, the basic science level in ninth grade was eliminated and these students were scheduled into the regular science course. Test scores indicated that except for six very low students (most of whom were mainstreamed from special education), the students scheduled for the basic course did not differ in reading and language scores from the regular students. Although they did differ in math scores, the Science teacher thought they were able to handle the regular science course. Midyear review of grades and discussion with the teacher indicated that the increased heterogeneity in the regular program was working well with the use

of a right brain approach to instruction. Classes with a distribution of lower achieving and special education students which did not exceed 25% were the most successful.

High School English Shift from Basic to Regular

With curricular modifications to the second semester of regular sophomore English, a section of basic students was able to succeed as well (in terms of semester grades) in the regular program as in the basic program, despite the more challenging material. The major curricular change was a reduction of the amount of material covered and additional instruction in techniques of reading literature and writing about it.

Ninth Grade Language Arts Basic Level Enrichment

Because of scheduling problems, students with very severe reading deficits were placed in a higher level course. The teacher was given permission to modify the curriculum as needed, and to reduce the traditional emphasis on skills in favor of a holistic approach to reading and reading motivation. The teacher reported success with motivating students to read and improving their ability to communicate and their confidence about reading.

Ninth Grade Movement from Pre-Algebra to Algebra

This program was the least successful in outcomes, but did result in some proposals for facilitating better success in math for all students. In the fall of 1986 a pre-Algebra teacher identified 20 out of 70 students as capable of more challenging work. Because of the vast curricular content differences between pre-algebra and algebra, he selected only the five most able and most motivated students for extra help. These students were given intensive outside tutoring (2-3 hours per week for two months). At the semester three were still in the tutoring program, passed a proficiency test, and were moved into Algebra. One immediately dropped out; he could not adapt to the social differences between the two classes. Two remained, but by the fourth quarter, one was described as "seriously struggling." One student out of five who tried with considerable tutoring out of twenty who could have been more challenged suggested that movement between current levels was not very feasible. Eliminating levels and/or changing the curriculum from year to semester segments to accommodate movement across levels seem to be more realistic approaches.

Fifth Grade Cooperative Learning

Students in the fifth grade at one elementary school were assigned to three classes such that one class was heterogeneous, one class was high level and one class was lower level. The teacher of the heterogeneous class was then trained in the Johnson Cooperative Learning Model and asked to use it during the year in at least

two subject areas. The other teachers were told to teach in whatever style they were most comfortable. Climate surveys and students' standardized test performance (pre and post measures) indicated some advantage to the cooperative learning strategy. This teacher has continued to use the strategy and has been invited to present this strategy to teachers in other buildings.

Sixth Grade Team Teaching

In a school which used departmental homogeneous grouping at grades five and six the teachers decided at sixth grade to experiment with a team teaching approach in which students would be more flexibly assigned to classes. This study in fact represents a component of the program which was initiated by teachers and carried through without much involvement from the central office. Hence little information about its success or longevity is available.

Fifth Grade Reading-as-Thinking Project

A third of the students from each of two fifth grade classes in one building were assigned three times a week to a special reading class in which the focus was on higher level reading comprehension skills. The students were selected so as to represent a heterogeneous group and to be parallel in composition to the remaining students in each of the two classrooms. Students were taught from a basal series which emphasized whole stories and used a round table discussion model and extensive writing experience for students. Pre-test mean scores on a standardized reading test were similar but post-test scores on a written reading assignment, scored by a blind rater, differed substantially. Lesson plan packets designed from this pilot were disseminated to fifth grade teachers throughout the district with inservice provided to interested teachers.

Conclusions

In June of 1988 the Board of Education approved a policy which supports eight principles as the basis for grouping practices, and promotes standardized criteria for grouping which increase the positive effects and minimize the negative aspects. To accompany this policy a much revised draft of administrative guidelines was completed at the same time. Implementation of the project during the current school year has proceeded on a case by case basis as administrators and teachers began to work with the guidelines. Major work on alternative grouping strategies is occurring with teachers and administrators who were most influenced by the process of piloting alternatives and generating the guidelines.

Input from staff, both from pilot projects and formal feedback on the guidelines, provided information which influenced the final form of the guidelines, Board policy,

and the continuing implementation of alternative strategies. A summary of these important insights appears below:

First there exists residual suspicion of heterogeneous grouping among a proportion of teachers. This group may be willing to modify its use to minimize harmful effects, but they will never willingly give up ability grouping.

Second, the current curriculum is not set up to accommodate heterogeneous grouping or the flexible movement of students between levels. Educational materials are also geared in their ability range to homogeneous grouping. Creative approaches to curriculum, plus the time to develop and implement them, are needed.

Third, teachers' perception of instructional strategies must be changed and expanded. A new tool box and a willingness to try different strategies are needed.

Fourth, organizational/structural conditions in the school (covert tracking, placement, scheduling, mobility, etc.) which promote homogeneous grouping by default or make heterogeneous grouping difficult must be identified, anticipated, and designed so as not to interfere with procedures which promote heterogeneous grouping.

Fifth, the benefits of some kinds of ability grouping, such as transitional grades and flexible skill adjusted grouping, should be acknowledged and efforts taken to curtail any negative effects.

Sixth, appropriate training must be provided before teachers are asked to teach classes which are grouped differently than that to which they are accustomed.

REFERENCES

Anderson, C. S. (1987). Organizational factors affecting curriculum change: A case study of instructional grouping innovation. Paper presented at the annual meeting of the American Educational Research Association, Washington D.C.

Barr, R. (1987). Consideration of grouping approaches in Crete-Monee schools. Paper presented at the annual meeting of the American Educational Research Association, Washington, D.C.

Block, J. H. (1985). Belief systems and instructional improvement: A lesson in mastery learning. Paper presented at the annual meeting of the American Educational Research Association, Chicago.

Helms, D. (1985). Teaching variables. Paper presented at the annual meeting of the American Educational Research Association, Chicago.

Oakes, J. Keeping track: How schools structure inequality. New Haven: Yale University Press, 1985.

Parsons, T. (1959). The school class as a social system. Harvard Educational Review, 29 (4).

Rutherford, W. L. & Murphy, S.C. (1985). Change in high schools: Roles and reactions of teachers. Paper presented at the annual meeting of the American Educational Research Association, Chicago.

Sarason, S. B. (1971). The culture of the school and the problem of change. Boston: Allyn & Bacon.

Sarason, S. B. & Klaber, M. (1985). The school as a social situation. Annual Review of Psychology, 36, 115-40.

Sergiovanni, T. J. (1986). Understanding reflective practice. Journal of Curriculum and Supervision, 1 (4), 353-359.

Sirotnik, K.A., Goldenberg, C., & Oakes, J. (1986). Teachers meet technology: Computer courseware authoring in schools. Journal of Curriculum and Supervision, 1, (4), 316-330.